

COMMONWEALTH OF PENNSYLVANIA

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NATURAL GAS SITUATION IN PENNSYLVANIA

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Production and Consumption. The production of natural gas in Pennsylvania is decreasing. From its first use in 1872 it rose to a maximum of 135 billion cubic feet in 1912, from which the production declined to 123 billion cubic feet in 1918. The consumption of natural gas in Pennsylvania rose steadily to 202 billion cubic feet in 1917 and then declined to 177 billion cubic feet in 1918. The gas required to meet the demand in excess of production in this State comes mainly from West Virginia. The decline in Pennsylvania has been masked by the increased importations from West Virginia. But the production of natural gas in West Virginia reached its maximum of 308 billion cubic feet in 1917, declining to 265 billion cubic feet in 1918, and the evidence at hand indicates that the output is decreasing steadily.

The most serious phase of the matter is that this decline has occurred in the face of an ever increasing amount of drilling. The number of gas wells brought in yearly in Pennsylvania steadily increased from 513 in 1900 to 1163 in 1917. Since then, rising prices and the finding of gas at McKeesport have stimulated drilling as never before. The McKeesport pool helped materially to retard the decline in production in the winter of 1919-1920 but will not help the situation the coming winter.

The decline shows not alone in the total amount of gas produced, but in the rapid lowering of the rock pressure in the several fields, in the initial production of new wells, in the smaller average output of all wells, in the shorter life of recently drilled wells, and in the smaller acreage per well.

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Rock pressure in many of the gas fields of Pennsylvania and West Virginia has fallen off 50 to 75 per cent. According to the U. S. Geological Survey the average annual delivery capacity of gas wells in West Virginia declined from 65.2 million cubic feet in 1906 to 27.3 million in 1918, or 58 per cent, and the average number of acres per gas well has declined from nearly 1000 in 1909 to 242 acres in 1918. In 1900, 3776 gas wells in Pennsylvania produced over 68 billion cubic feet of gas, or 18 million cubic feet per well for the year. In 1917, 14,534 wells produced 133-1/3 billion cubic feet of gas, or 9.1 million cubic feet per well for the year - a reduction of nearly one-half.

Big wells in the old Murrysville field poured out a great volume of gas for years. The sky rocket history of the big wells at McKeesport - a noisy and spectacular rise and almost equally rapid decline - is common knowledge. Many recent wells in other fields reported as coming in with large output show similar rapid decline, all indicating that the developed fields are being exhausted.

Outlook. The outer limits of possible gas territory are definitely outlined. Large areas within these limits have not been fully tested, but each year sees the drill in new fields and testing deeper sands. The net result gives no hope of stopping the declining production but only of easing off the drop. Pennsylvania will produce some gas for many years more and a large aggregate amount of gas will come from certain counties which produce very little today, but it is believed that nearly all of the great reserves of the State have been tapped and from now on production will decline steadily and more or less rapidly.

Use. As commonly used in homes today from 75 to 87 per cent of the heat value of natural gas is wasted; 75 per cent when burned in the fire pot of an ordinary coal furnace; 87 per cent when burned in low-set burners in solid top cooking stoves. If burned in efficient appliances at low pressure the same heat could be obtained from one-third the gas now used.

In Pennsylvania natural gas serves nearly $2\frac{1}{2}$ million people in their homes and 4500 industrial concerns. For certain uses, such as cooking, heating water, lighting, and a few industries, natural gas has such marked advantages as to be classed as a necessity. For house heating and most industrial uses, natural gas is a luxury.

The public utility and industrial uses of natural gas furnish a fairly constant demand the year through. The house heating use varies with the seasons. It is this use that produces the critical peaks that tax the delivery capacity of the pipe lines and cause the shortage.

The seasonal demand for gas for house heating is met by cutting off industrial users in winter. The industrial users, by furnishing a large demand in the summer, (about 60 per cent of the total demand), absorb a large share of the cost of upkeep of the lines. On the other hand they are contributing in large measure to the early exhaustion of the fields.

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Conclusion. If the present wasteful methods of production and consumption are continued, a few years will see the end of the extensive use of natural gas in this State except in favored localities; but if present losses can be materially reduced, the use of natural gas for house heating restricted, and efficient use made compulsory, it should be possible to extend the use of natural gas for cooking and certain other household and manufacturing uses for a full generation.

Recommendations. 1. That the drilling in of wells follow the recommendations of the National Committee on Gas Conservation.

2. That the natural gas companies be urged to make closer inspection of their lines, particularly of the gathering lines, and to do their utmost to reduce field and transportation losses, recognizing that this will mean replacing many old lines and increased cost for inspection.

3. That industrial users be classified and that during the winter gas be denied all those who can use coal. To cut off industrial users in the summer would extend the life of natural gas but would greatly increase the cost to domestic consumers. It is doubtful if our people are ready to take this step now.

4. That a definite time be set after which natural gas may not be used for house heating furnaces or stoves except under specified conditions. In the meanwhile, the use of gas in domestic furnaces might be discouraged by gradually advanced prices for such use and the setting of a definite limit on the amount of gas allowed each household a month. (Many houses, especially in Pittsburgh, are designed for heating by natural gas only, and time will be required to adapt them for heating by coal.)

5. The waste in domestic or allowed industries should be reduced by requiring the use of approved efficient burners, or by the raising of present burners, so that natural gas is burned in the same manner as artificial gas, at approximately the same low pressure. If one foot of gas can be made to do the work of three, not only is gas conserved but the cost to the user is reduced that much.

6. The increased cost of producing gas today must be recognized by the public. The items of this increased cost to the industry are: increased cost of drilling, supplies, pipe and pipe laying; increased number of wells required to supply the same quantity of gas; increased cost of pumping due to reduced rock pressures in the field and added cost of waste reduction, if practiced.

7. The present initial cost of gas could be greatly reduced by pooling of interests in the several fields, leading to the elimination of unnecessary drilling and of duplication of gathering pipe lines and transmission lines.

